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GLOSSARY

A

Abundance. The number of fish in a *population*.

Active channel width. The distance across a stream or channel as measured from bank to bank at bankful flow.

Allele. Any one of a number of alternative forms of a gene that can occur at the same location (*locus*) on a chromosome. A *population* can have many alleles for a particular locus, but an individual can carry no more than two alleles at a *diploid* locus.

Allozymes. Alternative forms of an enzyme that have the same function, are produced by different *alleles*, and are often detected by *protein electrophoresis*.

Anthropogenic factor. A circumstance or influence caused or produced by human action.

Artificial propagation. *Hatchery* spawning and rearing of salmon, usually to the *smolt* stage.

AUC (Area Under the Curve). A statistical technique for estimating an annual total number of *spawners* from periodic spawner counts.

B

Barrier. A blockage such as a waterfall, culvert, or rapid that impedes the movement of fish in a stream system.

Biological Review Team (BRT). The team of scientists who evaluate scientific information for the National Marine Fisheries Service (NMFS) status reviews.

C

Carrying capacity. The number of individuals that the resources of a habitat can support.

Catastrophic events. Sudden events that disastrously alter large areas of landscape. These can include floods, landslides, forest fires, and volcanic eruptions.

Channel gradient. The slope of a stream reach.

CIMRS (Cooperative Institute for Marine Resources Studies). A cooperative project between Oregon State University and NOAA Fisheries.

CLAMS (Coastal Landscape Analysis and Modeling Study). A cooperative project between the Oregon State University Department of Forestry and the U.S. Forest Service Pacific Northwest Forest Science Laboratory.

Co-managers. Federal, state, and tribal agencies that cooperatively manage salmon in the Pacific Northwest.

Coded-wire tag (CWT). A small piece (0.25 x 0.5 or 1.0 mm) of stainless steel wire that is injected into the snouts of juvenile salmon and steelhead. Each tag is etched with a binary code that identifies its release group.

D

De-listing. Taking a species off of the endangered species list.

Demographic stochasticity. "Chance events in the survival and reproductive success of a finite number of individuals" (Shaffer 1981).

DEM (Digital Elevation Model). A digital data set representing a topographic map that can be used for computer analysis. We used DEMs to calculate the *intrinsic potential* of stream systems.

Density effects. Survival of juvenile salmon may be influenced by their density. Survival is usually higher when density is low.

Dependent populations. Populations that rely upon immigration from surrounding populations to persist. Without these inputs, dependent populations would have a lower likelihood of *persisting* over 100 years.

Depensation. The effect where a decrease in spawning stock leads to reduced survival or production of eggs through either (1) increased predation per egg given constant predator pressure, or (2) the "Allee effect" (the positive relationship between population density and the reproduction and survival of individuals) with reduced likelihood of finding a mate.

Diploid. Having two complete chromosome pairs in a nucleus.

Distinct population segment (DPS). A *population*, or group of populations of a vertebrate species that is "discrete" from other populations and *significant* to the biological species as a whole.

DNA (deoxyribonucleic acid). A complex molecule that carries an organism's heritable information. The two types of DNA commonly used to examine genetic variation are *mitochondrial DNA* (mtDNA), a circular molecule that is maternally inherited, and *nuclear DNA*, which is organized into a set of chromosomes (see also *allele* and *electrophoresis*).

Donor populations. These are *Functionally Independent* or *Potentially Independent populations* that are large enough to "donate" *migrant* adults to *Dependent populations*.

E

Ecoregion. An integration of physical and biological factors such as geologic history, climate, and vegetation.

Effective migration rate. The proportion of successfully spawning adults that migrate to a new *population*. (Excludes *migrants* that do not successfully reproduce.) (See also *Migration rate*.)

Electrophoresis. The movement of charged particles in an electric field. This process has been developed as an analytical tool to detect genetic variation revealed by charge differences on proteins or molecular weight in DNA.

Endangered species. A species in danger of extinction throughout all or a significant portion of its range.

ESA. U.S. Endangered Species Act.

Escapement. Usually refers to adult fish that "escape" from both fisheries and natural *mortality* to reach the spawning grounds.

Estuarine habitat. Areas available for feeding, rearing, and smolting in tidally influenced lower reaches of rivers. These include marshes, sloughs and other backwater areas, tidal swamps, and tide channels.

Evaporation potential. The maximum depth of water that could evaporate in a year. Evaporation potential is principally determined by temperature and relative humidity. It is a measure of how much moisture "stress" plants are under due to dry conditions.

Evolutionarily Significant Unit (ESU). An ESU represents a *distinct population segment* of Pacific salmon under the *Endangered Species Act* that 1) is substantially reproductively isolated from conspecific populations and 2) represents an important component of the evolutionary legacy of the species. See also *Distinct population segment*.

Exploitation rate. The proportion of adult fish from a *population* that die as a result of fisheries.

Extinction. The loss of a species, or ESU. May also be used for the extirpation of local populations.

F

Factors for decline. These are factors identified that caused a species to decrease in *abundance* and *distribution* and become threatened or endangered.

Fecundity. The number of offspring produced per female.

Fourth-Field and Fifth-Field Hydrologic Units. In the United States Geological Survey (USGS), hydrologic units have been divided at different scales. The area of a fourth-field hydrologic unit is 440,000 acres and a fifth-field hydrologic unit is between 40,000 and 250,000 acres.

Freshwater habitat. Areas available for spawning, feeding, and rearing in freshwater.

Fry. Young salmon that have emerged from the gravel and no longer have an egg sack.

Functionally Independent population**.** A high-*persistence population* whose dynamics or extinction risk over a 100-year time frame is not substantially altered by exchanges of individuals with other populations (*migration*). Functionally independent populations are net "donor" populations that may provide *migrants* for other types of populations. This category is analogous to the "independent populations" of McElhaney et al. (2000).

G

Genetic distance. A quantitative measure of the genetic difference between a pair of samples, based on *allele* frequencies at multiple loci.

Genetic drift. Random changes in gene frequencies of *populations*.

Gradient. The slope of a stream system.

H

Habitat quality. The suitability of physical and biological features of an aquatic system to support salmon in the freshwater and estuarine system.

Hatchery. A facility where *artificial propagation* of fish takes place.

Historical abundance. The number of fish that were produced before the influence of European settlement.

Homing fidelity. The propensity of an adult salmon to return to its natal stream.

Hydrology. The distribution and flow of water in an aquatic system.

I

Independent Multidisciplinary Science Team (IMST). A scientific advisory body to the Oregon Legislature and Governor on Watershed, Forestry, Agriculture, and Fisheries Science issues.

Inbreeding depression. Reduced survival rates of individuals in a *population* suffering from the effects of harmful recessive genes through matings between close relatives. Inbreeding depression may become a problem when populations get very small.

Independence. Reflects the interaction between *isolation* and *persistence*. A persistent population that is highly isolated is highly independent.

Intrinsic potential. A modeled attribute of streams that includes the *channel gradient, valley constraint* and *mean annual discharge of water*. Intrinsic potential in this report refers to a measure of potential coho salmon habitat quality (Burnett et al. 2003).

Isolating mechanisms. Things that reduce the ability of *populations* to interbreed. These could include physical mechanisms such as distance, and behavioral mechanisms such as *run timing*.

Isolation. The degree to which a *population* is unaffected by *migration* to and from other populations. As the influence of migration decreases, a population's isolation increases.

J

Jack. A coho salmon that matures at age 2 and returns from the ocean to spawn a year earlier than normal. Jacks are all male fish.

Jacking rate. The proportion of adult coho salmon from a brood that return as *jacks*.

Juvenile. A fish that has not matured sexually.

L

Latitudinal cline (also known as a latitudinal diversity gradient.) A change in a biological trait that occurs across latitudes. For example, *jacking rate* generally increases from north to south.

Life history. The specific life cycle of a fish from egg to adult.

Limiting factors. Factors that limit survival or *abundance*. They are usually related to habitat quantity or quality at different stages of the life cycle. Harvest and predation may also be limiting factors.

Listed species. Species included on the "List of Endangered and Threatened Species" authorized under the *Endangered Species Act* and maintained by the *U.S. Fish and Wildlife Service* and *NOAA Fisheries*.

Littoral zone. In lakes, the area of lake bottom that receives enough light for rooted plants to grow. In the ocean, the marine ecological realm that experiences the effects of tidal and longshore currents and breaking waves to a depth of 5 to 10 m (16 to 33 feet) below the low-tide level, depending on the intensity of storm waves. (Encyclopædia Britannica 2004).

Locus. Location on a chromosome that holds a specific gene. Plural is loci.

Lowland habitat. Low-gradient stream habitat with slow currents, pools, and backwaters used by fish. This habitat is often converted to agricultural or urban use.

M

Marine survival rate. The proportion of smolts entering the ocean that return as adults.

Mean annual discharge of water. A single value or average that summarizes or represents the annual discharge amount, typically expressed in cubic meters per second.

MES, Inc. Manufacturing Engineering Systems, Inc.

Metric. A unit of measure.

Microsatellite. A class of repetitive DNA used for estimating genetic distances.

Migrant. A fish that is born in one *population* but returns to another population to spawn.

Migration. Movement of fish from one *population* to another.

Migration rate. The proportion of *spawners* that migrate from one population to another. See also *Effective migration rate*.

Mitochondrial DNA (mtDNA). The *DNA* genome contained within mitochondria and encoding a small subset of mitochondrial functions. Only female mtDNA is transmitted to the next generation.

Mortality. Death.

N

NMFS. National Marine Fisheries Service, also known as NOAA Fisheries.

NOAA. National Oceanic and Atmosphere Administration.

NOAA Fisheries. The fisheries branch of NOAA, also known as NMFS.

Nuclear DNA (nDNA). The DNA contained in the chromosomes within the nucleus of eukaryotic cells. The nuclear genome in Pacific salmon is approximately 4.6 billion base pairs in size.

NWFSC. NOAA Fisheries Northwest Fisheries Science Center.

O

ODFW. Oregon Department of Fish and Wildlife.

ONCC. Oregon Northern California Coho Salmon Technical Recovery Team.

ORISE. Oak Ridge Institute for Science and Education.

OWEB. Oregon Watershed Enhancement Board.

P

Parr. The life stage of salmonids that occurs after *fry* and is generally recognizable by dark vertical bars (parr marks) on the sides of the fish.

Persistence. A *population's* relative ability to sustain itself without input from neighboring populations.

Phylogenetic tree. The genetic distances and relationships among *populations*, frequently represented with a branching or tree-like diagram.

Population. A group of fish of the same species that spawns in a particular locality at a particular season and does not interbreed substantially with fish from any other group.

Population classification. The grouping of *populations* into *Functionally Independent*, *Potentially Independent*, and *Dependent* classes.

Population dynamics. Changes in the number, age, and sex of individuals in a *population* over time, and the factors that influence those changes. Five components of populations that are the basis of population dynamics are birth, death, sex ratio, age structure, and dispersal.

Population identification. Delineating the boundaries of *historical populations*.

Population structure. This includes measures of age, density, and growth of fish populations.

Potentially Independent populations. *High-persistence populations* whose *population dynamics* are substantially influenced by periodic immigration from other populations. In the event of the

decline or disappearance of *migrants* from other populations, a Potentially Independent population could become a *Functionally Independent* population.

Production. The number of fish produced by a *population* in a year.

Productive capacity. Maximum possible *production* from a given area.

Productivity. The rate at which a *population* is able to produce fish.

Protein electrophoresis. An analytical laboratory technique that measures differences in the amino acid composition of proteins from different individuals. See also *Electrophoresis*.

R

Recovery. The reestablishment of a threatened or endangered species to a self-sustaining level in its natural ecosystem (in other words, to the point where the protective measures of the Endangered Species Act are no longer necessary).

Recovery domain. The area and species that the Technical Recovery Team is responsible for.

Recovery plan. A document identifying actions needed to make *populations* of naturally produced fish comprising the Oregon Coast Coho Salmon *ESU* sufficiently *abundant*, *productive*, and diverse so that the ESU as a whole will be self-sustaining and will provide environmental, cultural, and economic benefits. A recovery plan will also include goals and criteria by which to measure the ESU's achievement of recovery, and an estimate of the time and cost required to carry out the actions needed to achieve the plan's goals.

Recovery scenarios. Various sequences of events expected to lead to *recovery* of Oregon Coast Coho Salmon.

Run timing. The time of year (usually identified by week) when spawning salmon return to the spawning beds.

S

Salmonids. Any of the species included in salmon, trout, and char.

Significant. Biological significance refers to an effect that has a noteworthy impact on health or survival.

Smolt. A life stage of salmon that occurs just before the fish leaves freshwater. Smolting is the physiological process that allows salmon to make the transition from fresh to salt water.

Smolt capacity. The maximum number of smolts a basin can produce. Smolt capacity is related to habitat quantity and quality.

Spawners. Adult fish on the spawning grounds.

Species. Biological definition: A small group of organisms formally recognized by the scientific community as distinct from other groups. Legal definition. Refers to joint policy of the USFWS and NMFS that considers a species as defined by the ESA to include biological species, subspecies, and *DPSs*.

Stock transfer. The practice of moving fish between basins or *populations*.

Stray rate. As used in this document, the stray rate refers to the number of spawning adults that return to a stream other than their natal stream within a basin. (See also *Migration rate*.)

Sustainability. The ability of a stock to *persist* or sustain itself over long periods of time.

SWFSC. NOAA Southwest Fisheries Science Center.

T

Threatened species. A species not presently in danger of extinction but likely to become so in the foreseeable future.

TRT. Technical Recovery Team.

U

USFS. United States Forest Service.

USGS. United States Geologic Survey.

V

Valley constraint. The valley width available for a stream or river to move between valley slopes.

Viability. The likelihood that a *population* will *sustain* itself over a 100-year time frame.

Viability criteria. A prescription of a *population* conservation program that will lead to the *ESU* having a negligible risk of extinction over a 100-year time frame.

W

Warmwater fish. Spiny-rayed fish such as sculpins, minnows, darters, bass, walleye, crappie, and bluegill that generally tolerate or thrive in warm water.